

# PATENT SPECIFICATION

974,426



DRAWINGS ATTACHED

974,426

Inventor: COLIN BERNARD BOLTON

Date of filing Complete Specification: Jan. 18, 1963.

Application Date: Oct. 23, 1961.

No. 37881/61.

Complete Specification Published: Nov. 4, 1964.

© Crown Copyright 1964.

Index at acceptance:—A3 V1A5C

International Classification:—A 41 d

## COMPLETE SPECIFICATION

### Pressure Suit

I, MINISTER OF AVIATION, London, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to pressure suits. The term pressure suit as used in this specification refers to an inflatable flexible garment made of gas impermeable material and the purpose of such a suit is to apply an external pressure to the wearer by means of gas under pressure within the suit. Such suits are provided for the crew of aircraft or spacecraft for flying at high altitude where the atmospheric pressure is very low or nil.

A problem appertaining to pressure suits is the provision of adequate mobility for the wearer when the suits are under pressure, because there is then a natural tendency for the various parts of the suit to assume a cylindrical shape with the cylindrical walls in tension. Also the wearer, by bending any part of the suit reduces the volume and this raises the gas pressure and further increases the resistance to the bending.

According to the invention, a joint for a pressure suit is contained in a generally tubular part of the suit and includes a slot in the region of bending, the slot being in a transverse plane so that its ends are approximately diametrically opposed at the ends of a virtual pivot axis of the joint, the slot being closed by a generally elliptical panel of garment material which is wider than the slot in a datum position, the surplus width permitting bending of the joint.

An embodiment of the invention will now be described with reference to the diagrammatic drawings accompanying the provisional specification in which

Figure 1 shows the components of a knee joint.

Figure 2 shows an assembled joint in *a* the flexed and *b* the extended position, and Figure 3 shows some regions of a garment in which a [Price 4s. 6d.]

joint similar to that of Figure 2 may be provided.

In Figure 1, the pieces of material illustrated are the rear leg portion 10, front thigh portion 11, front lower leg portion 12 and elliptical panel 13. These portions are sewn together to form the tube shown in Figure 2*a* in which the seams are in broken lines.

It is essential that the point A representing the inner end of the slot as formed to receive the panel 13 is on or near the virtual axis of bending of the knee joint when the garment is pressurised. It should be noted that the edges 11*a* and 12*a* are not straight but have a curved length equal to the edges of the panel 13 to which they are joined in making up the garment. When the knee is flexed, the joint assumes the condition shown in Figure 2*a* with slight puckering at the rear and with the material at the front extended. When the knee is straight the joint assumes the condition shown in Figure 2*b* with a slight fold of surplus material behind the panel 13.

Where additional fullness of the joint is required it is desirable that the panel of material which closes the slot is made up of several components joined side by side each component having curved edges and with its major dimension lengthwise of the slot.

In Figure 3, a suit is shown with joints similar to those of Figure 2 at the elbow 14, buttocks 15, knee 16, and shoulder 17, the panel portion in each joint spanning the bending axis.

#### WHAT I CLAIM IS:—

1. A joint for a pressure suit in which a generally tubular part containing the joint includes a slot in the region of bending, the slot being in a transverse plane so that its ends are approximately diametrically opposed at the ends of a virtual pivot axis of the joint, the slot being closed by a generally elliptical panel of garment material which is wider than the slot in a datum position, the surplus width permitting bending of the joint.
2. A joint as claimed in claim 1 in which

50

55

60

65

70

75

80

85

90

adjacent generally tubular parts are partly connected together end to end to leave the slot between them in the region of bending.

3. A joint as claimed in claim 1 or 2 in which the panel of garment material is made up of several components joined side by side, each component having curved edges and with its major dimension lengthwise of the slot.

4. A joint as claimed in claims 1, 2 or 3 in which the edges forming the slot are curved and of equal length to the edges of the panel to which they are attached.

5. A joint for a pressure suit substantially as hereinbefore described with reference to the drawings accompanying the provisional specification.

A. L. BING,  
Chartered Patent Agent,  
Agent for the Applicant.

Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press (Leamington) Ltd.—1964. Published by The Patent Office, 25 Southampton Buildings, London, W.C.2, from which copies may be obtained.

974426

PROVISIONAL SPECIFICATION

1 SHEET.

*This drawing is a reproduction of  
the Original on a reduced scale*

2/455  
457  
456  
2.13  
2.15  
2.16  
2.17  
459  
411  
412  
414  
24  
62  
78,3  
122  
267  
268  
275

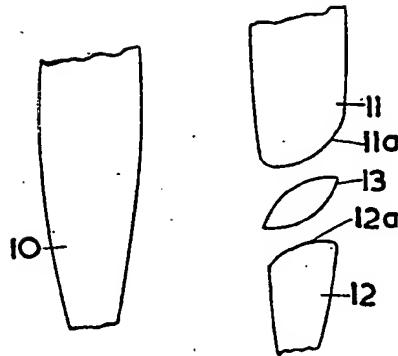
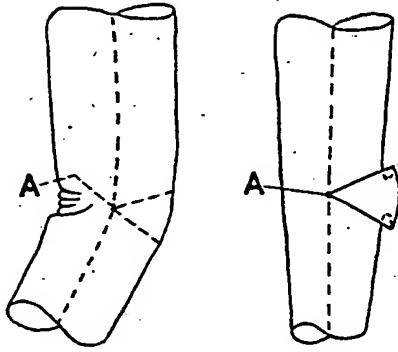


FIG. 1



(a) FIG. 2 (b)

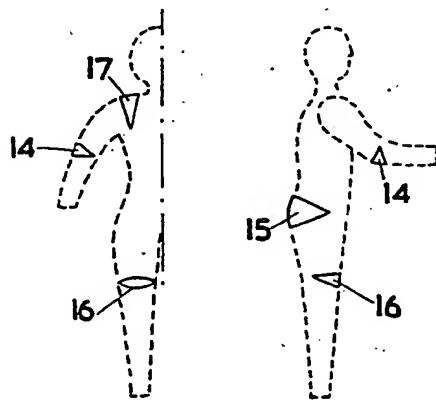


FIG. 3